



# Stop AMR

## Global Media Monitor

21-27 March 2020

[www.stopamr.eu](http://www.stopamr.eu)

### Pharma's potential impact on water quality

Citizen under medication excrete part of the drugs and metabolites. This mean that they can end up in waterways if some are not destroyed in the water plan.

Few is known regarding the water contamination from the pharmaceutical companies. A team in Switzerland wanted to compare the discharged wastewater from two treatments plants, both ending their course in the Rhine.

One of the plants only received domestic wastewater and the other one received also wastewater from a pharmaceutical manufacturing site.

The team collected daily samples of treated water for three months. The team identified 25 compounds related to the pharmaceutical industry and they were statically present in higher concentration in the treatment plant receiving wastewater from pharmaceutical industries.

Researchers also found that 60 miles downstream, the concentrations only barely reach the domestic treated water's level.

This suggest that even a single company can impact the water quality for millions of people

Source: [EurekAlert!](#), 25 March 2020

### New device quickly detects harmful bacteria in blood

A small device has been developed to detect potentially dangerous bacteria in blood. This could help health care professionals to fight efficiently possible deadly infections. The device is capable to capture around 86% of the bacteria and particles present in the blood with multiple magnetic beads sizes to isolate bacteria in the device. It is cheap and easy to produce and to use.

Therefore, it may be an ideal instrument to use at large scale. The producers are at the moment trying to perfect the device.

Source: [EurekAlert!](#), 23 March 2020

### Decreasing antibiotic use, the gut microbiota, and asthma incidence in children: evidence from population-based and prospective cohort studies.

The study supports the link between early antibiotic use and childhood asthma.

The study found a 26% decrease in asthma incidence in the young children from 1 to 4 years during the 200-2014 period. They successfully correlated it with a drastic reduction of more than 60 % in antibiotic prescribed to children under the age of 1.

Examination of the gut microbiota from children who received antibiotics shown a dysregulated bacterial population. This composition's alteration suggest that the gut microbiome could play a mediating role in asthma development.

Source: [The Lancet](#), 24 March 2020

### Graphite nanoplatelets on medical devices kill bacteria and prevent infections

4 million Europeans contract annually infections during health care procedures. Those bacterial infections mainly occur after medical devices and implants within the body.

Those infections are costly and induce suffering in patients and many antibiotics have to be used, increasing a possible antibiotic resistance.



Therefore, researchers wanted to develop antibacterial surfaces to reduce the number of infections and indirectly the need for antibiotics.

They demonstrated that surfaces formed of a mixture of polyethylene and graphite nanoplatelets kill 99.99 % of bacteria trying to attach to the surface.

This could prevent the formation of biofilms coming from patient's body fluids. And, as human cells are larger than bacterial cells, they are not affected by the graphite nanoplatelets.

To use implants like these could increase implant longevity and reduce patient's suffering.

Source: [EurekAlert!](#), 23 March 2020

---

### Mutations Causing Drug Resistance Modelled by Engineers

A variety of mutations may occur, and drug developers need to target the appropriate mutation to kill the pathogen or the cancer cells.

In an article entitled "Multi-scale Predictions of Drug Resistance Epidemiology Identify Design Principles for Rational Drug Design," published in Cell Reports they report that the most drug-resistant mutation was not necessarily the mutation that dominated.

"Rationally designing drugs that last longer in the face of biological evolution is a critical objective of drug discovery. However, this goal is thwarted by the diversity and stochasticity of evolutionary trajectories that drive uncertainty in the clinic. Although biophysical models can qualitatively predict whether a mutation causes resistance, they cannot quantitatively predict the relative abundance of resistance mutations in patient populations" write the investigators in Cell Reports.

"We present stochastic, first-principle models that are parameterized on a large in vitro dataset and that accurately predict the epidemiological abundance of resistance mutations across multiple leukemia clinical trials. The ability to forecast resistance variants requires an understanding of their underlying mutation biases." Beyond leukemia, a meta-analysis across prostate cancer, breast cancer, and gastrointestinal stromal tumors suggests that resistance evolution in the adjuvant setting is influenced by mutational bias.

Drug resistance is a problem when treating diseases caused by bacteria, viruses and cancers, but the researchers chose to investigate mutations in cancers because understanding mutations in cancer cells is simpler.

Source: [GEN](#), 24 March 2020

---

### Using CRISPR to find muscular dystrophy treatments

It appears that Crispr-Cas 9, a well-known potential tool to correct genetic diseases, could also be used to find specific genes playing a role in the disease expression.

Researchers used the technique to better understand the facioscapulohumeral muscular dystrophy (FSHD). This disease has no treatment at the moment and induces muscle weakness in the face, shoulders and upper arms.

The disease is induced by the activation of a gene normally active principally during the fetal development, DUX4. Once activated, it produces proteins leading to cell death.

They used CRISPR-Cas9 to mutate every gene in the genome to find which gene, when knocked out, enable human muscle cells to grow and survive in presence of the protein DUX4.

They discovered 6 strong hits and many genes played a role in the hypoxia cellular response. They now want to develop a mouse model to test multiple drugs which could counteract the DUX4's toxic effect, some are already approved.

Researchers believe that their approach could provide an accelerated path to understanding complex genetic diseases, discovering therapeutic targets, and testing potential treatments.

Source: [EurekAlert!](#), 25 March 2020

### Hong Kong records rise in foodborne outbreaks

The number of foodborne outbreaks in Hong Kong decreased in the last decade. But, in 2019, a slight rise occurred. The authorities explained this rise by a few well known's incidents. *Salmonella* was behind almost 60% of the acquired diseases and viruses only accounted for less than 10 %. Around 26% was attributed to *Vibrio parahaemolyticus* and the rest was caused by *Staphylococcus aureus* and *Bacillus cereus*.

In total, almost 200 outbreaks occurred and affected 800 people.

Source: [Food Safety News](#), 25 March 2020

---

### Survey finds low Campylobacter knowledge in Germany

In Germany, *Campylobacter* is the main bacterial infection, causing diarrheas, with 70,000 confirmed cases in 2017. If consumers are aware about the Toxoplasma, they don't know much regarding Campylobacter. A previous study stated that only 28% of the people had heard of *Campylobacter*. The percentage of knowledge increase significantly with age as the older group was twice likely to know about *Campylobacter* than the younger one.

Increase and promote the knowledge about *Campylobacter* and transmission routes may be the solution to reduce *Campylobacter's* infection incidence.

Source: [Food Safety News](#), 26 March 2020